

TRAINING ANTICIPATION WITH FUNCTIONAL VS. DYSFUNCTIONAL COLOUR CUES IN BEACH-VOLLEYBALL

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Introduction

Evidence suggests that guiding visual attention to information-rich areas using the colour-cue method accelerates learning in anticipation tasks (e.g., Cañal-Bruland, 2009). However, findings are inconsistent so that it has been questioned whether highlighting relevant kinematic cues actually affect learners' gaze behaviour (Abernethy et al., 2012). Therefore, in an intervention study, colour cues were experimentally manipulated by presenting functional (i.e., highlighting the gaze path of volleyball experts) vs. dysfunctional (i.e., highlighting the ball path) colour cues in a beach-volleyball anticipation task. It was expected to find better learning for the functional compared to the dysfunctional and a control group.

Methods

3 groups of 10 participants each (14 male, 16 female) watched beach-volleyball attacks that were displayed on a life-size screen. The task was to predict the type of attack (cut shot, line shot, smash). In the intervention (12 blocks of 12 trials each), scenes were presented either with functional, dysfunctional or without colour cues (control group). Participants were instructed either to learn the (alleged) expert-like gaze behaviour (colour-cue groups) or to focus on the different attack techniques (control group). Performance was tested in pre-, post- and retention tests (3 blocks of 12 trials each, occluded either at 40 ms or 200 ms before ball-hand contact). As dependent measure, decision accuracy was assessed and analysed with 3 (intervention) x 3 (test) x 2 (occlusion) x 3 (shot type) ANOVAs with repeated measures on the last three factors.

Results

Significant main effects for test, $F(2,25) = 43.94, p < .01, f = 0.98$, and shot type, $F(2,25) = 7.46, p < .05, f = 0.55$, were found indicating that participants improved from pre- to post- and retention test and reaching higher accuracies for line shots and smashes compared to cut shots. Furthermore, a main effect for occlusion was revealed, $F(1,25) = 65.97, p < .01, f = 1.64$, with higher accuracies in scenes with late occlusions. A trend for an interaction for block x group, $F(4,25) = 1.90, p = .13, f = 0.39$, suggests better results of the control group in post- and retention test.

Discussion

The results show that participants were able to improve decision making independent of intervention type. Interestingly, no advantage of the functional colour-cue group was found. Instead, by tendency, the control group outperformed both experimental groups. Consequently, it might be suggested that gainful information could not be extracted from colour cues (Abernethy et al., 2012).

References

- Abernethy, B., Schorer, J., Jackson, R.C., Hagemann, N. (2012). J Exp Psychol Appl., 18, 143-153.
Cañal-Bruland, R. (2009). Res. Q. Exerc. Sport, 80, 369-374.